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CHARLES WILLISON JOHNSON
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ENT. NEWS, VOL. XLIV, PLATE V.
(PHOTOGRAPH OF ABOUT 1892.)

ENTOMOLOGICAL NEWS

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William Jacob Holland.

(Portrait, Plate V.)

With the death of Dr. William Jacob Holland, which occurred on December 13, 1932, an eminent figure in the world of science passed away. He was the dean of American entomologists, the author of innumerable publications in this field. But Dr. Holland was far more than an eminent entomologist of world-wide reputation—he was a naturalist of a universality of erudition which is but rarely found among scientific men of the present day. With a prodigious memory, a keen understanding of the diversity of scientific problems, he was at home in the manifold domains of learning. Above all, he was a man of outstanding intellectual and spiritual culture, and that is why his loss has created an irreparable void in the community with which he has been associated for nearly three score of years and within the ranks of his fellow workers in the scientific field.

William Jacob Holland was born in Bethany, on the island of Jamaica, on August 16, 1848. His family was of Moravian extraction, residing for a long time in Salem, North Carolina. From there his father was sent as a missionary to the West Indies.

From early boyhood Dr. Holland was trained in studies of natural history. Upon graduation from the Moravian College and Theological Seminary at Bethlehem, Pennsylvania, in 1867, he received the degree of bachelor of arts from Amherst College in 1869. For a year after graduation he served as principal of a high school in Amherst, and the following year occupied the same position at Westboro, Massachusetts. Having been ordained into the Moravian ministry, he entered Princeton Theological Seminary and concluded the course in 1874. Subsequently he joined the Presbytery of Monmouth and came to Pittsburgh as pastor of the Bellefield Presbyterian Church, which position he held until 1891. In the course of

his pastorate Dr. Holland devoted much time to scientific studies. He went to Japan as a member of the United States Eclipse Expedition in 1887 and used this opportunity in a very profitable way for various biological investigations. In 1891 he was made chancellor of the Western University of Pennsylvania, now the University of Pittsburgh. In 1898 his friend, Andrew Carnegie, invited him to assume the responsibilities as director of the museum founded by this steel magnate. This office was held by Dr. Holland with signal success until 1922, when he became director emeritus of the Carnegie Museum. Under the administration of Dr. Holland the museum attained the rank of one of the most important scientific institutions of its kind on the continent. It would be scarcely possible to describe in a brief sketch all the outstanding services of Dr. Holland to this institution. Any attempt to enumerate his major accomplishments in this respect would be futile since it would necessitate a recital of the whole history of the growth of the Carnegie Museum since its inception. Dr. Holland performed the duties as vice-president of the Carnegie Hero Fund from 1904 to 1922, and upon his election as president of that body became a member of the Carnegie Corporation. In this latter capacity, Dr. Holland had an opportunity to devote his efforts in a most indefatigable way toward the promotion of the manifold courses within the competence of that body.

Dr. Holland was an active member of the board of trustees of several institutions of higher learning, and carried on the duties of Belgian Consul for some years after the world war. He had the distinction of becoming the founder of the American Association of Museums in 1907, and remained president of the association until 1909. He was a member of scores of scientific societies, among them the Zoological and Entomological Societies of London, the Entomological Societies of America, Washington, New York, Cambridge, Germany, France, Russia and Brazil; the American Zoological Society, Royal Society of Edinburgh, American Philosophical Society, and several foreign scientific academies. He was a councilor for the Association for International Conciliation, a member of the Academy of Natural Sciences, Philadelphia, [since Janu-

ary 31, 1882], the Pennsylvania Historical Society, Historical Society of Western Pennsylvania, and Moravian Historical Society, and corresponding member of the American Entomological Society.

Dr. Holland was the author of numerous scientific treatises and books, notably of "The Butterfly Book" and "The Moth Book," which became sources of reference for specialists and were chiefly instrumental in stimulating a widespread interest in lepidopterology among amateurs in this country. He also wrote many scientific papers issued by the United States Government and by various learned societies in America and abroad. The list of his contributions reaches about five hundred bibliographical items and covers an extraordinary variety of topics. The entomological papers alone approach one hundred and twenty titles from the year 1886 to the last years of his life. A large proportion of his papers on Lepidoptera deal with forms of Rhopalocera and Heterocera from West Africa. The lepidopterous fauna of Congo was thoroughly studied by Dr. Holland who also contributed to the knowledge of the butterflies of Somaliland, Sierra Leone, Kamerun, and the Seychelles. Other articles deal with the Lepidoptera of the Bahamas, the Isle of Pines, Hainan, Celebes, and Buru. Several articles written at various times of his long entomological career were devoted to the fauna of different portions of North America. In recent years Dr. Holland paid much attention to certain taxonomic problems and discussed on several occasions the significance of Hübner's "Tentamen" as a basis for nomenclatorial changes proposed by some modern authors. The Encyclopaedia Britannica applied to him as to a leading specialist in the museum field for the preparation of a survey of the history of scientific museums. For the last thirty-four years he edited the *Annals* and *Memoirs* of the Carnegie Museum. Numerous seats of higher learning honored themselves by bestowing degrees of honorary doctorate upon this distinguished scientist in recognition of his eminence in learning. Among such universities were Washington and Jefferson College, Amherst College, Dickinson College, New York University, Bethany College, St. Andrew's in Scotland, and the University of Pittsburgh.

Dr. Holland owned an extensive entomological collection which was particularly rich in Lepidoptera from North America, Africa, and certain regions of Asia. It contained representative series of Rhopalocera and Heterocera from various countries in different parts of the world. Especially valuable portions of the collection of Dr. Holland were the Pyralids collected by Pryer in Japan and the well-known collection of North American Rhopalocera assembled by Edwards, with all the types described by these noted entomologists. Dr. Holland's collection included types of many hundreds of new species which were described by him during his life time.

One of the most significant scientific achievements of Dr. Holland was connected with the paleontological exploration of the Carnegie Museum which were directed by him in Utah, Wyoming, Montana, and North Dakota. The finds of these expeditions resulted in many discoveries, including the celebrated *Diplodocus carnegici,* the original skeleton of which is adorning the gallery of fossils in the Carnegie Museum, whereas nine replicas were presented to the leading scientific institutions in Europe and both Americas. In recognition of his contributions to science Dr. Holland received decorations from Belgium, Austria-Hungary, Italy, Russia, and Spain.

Dr. Holland passed away amid his favorite labors, lending his concentrated attention, as throughout his life, to current problems of natural history advanced by contemporary investigations. Until the end he remained absorbed by the adventurous spirit of scientific research, responsive to the lure of exploring some new avenue of the ever-widening horizons of knowledge. He lived a life of exceptional usefulness. Endowed with a profusion of gifts, among which his linguistic abilities were by far not the least, he cultivated his native talents and molded them into a personality of unique qualities and values. A churchman, a leader in education, the father of the Carnegie Museum in Pittsburgh, a man of learning honored far and wide by academies, international congresses and universities, Dr. Holland will not only be mourned sincerely, but his achievements will also not fail to remain an inspiration challenging the best within us.* A. AVINOFF.

* [An autobiographical sketch of Dr. Holland and a more recent portrait than that here published are in the NEWS for July, 1929. —EDITOR.]

The Click Beetle's Click (Coleop.: Elateridae).

By H. Elliot McClure, Urbana, Illinois.

Click beetles with their startling saltatorial abilities have always been fascinating to the author, so that during the past two years a desultory study of the resilience of these insects has been carried on.

Individuals of the three species of elaterids, *Aeolus dorsalis, Melanotus difficilis* Blatch. and *Alaus oculatus,* Linn., were jumped in an effort to determine the average heights they achieved and *Melanotus* was studied for effects of fatigue and age upon the heighths of the leap.

Two methods of recording the height of the jump were used, the latter proving the more efficient. At first the insects were allowed to spring in a glass cylinder with a rule secured to it by rubber bands. The beetle was placed on its back on a glass plate under this and, as quickly as it regained its feet, was turned over. By watching the apex of the jump on the rule the height could be recorded. As the ascent was not perpendicular, the friction with the sides of the cylinder reduced the height. The second method gave the insect more freedom and obtained better results. A rule was supported at the back of a glass plate and the peak of the insect's spring recorded approximately from it. The tests were made of evenings in a warm room with the light directly above the specimen. The insects performed equally well under red or white light. They were weighed and measured for comparisons between the species.

The tiny *Aeolus,* seven millimeters long, was the aeronaut of the group. It jumped completely out of the experimental set up. The insect averaged 36.2 centimeters in its jumps and, being only seven millimeters long, leaped 51 times its own length.

Melanotus is a jumper of medium ability. It throws itself an average of 17.6 centimeters or eleven times its length. One specimen was made to jump 465 times in two hours before it refused to spring.

Alaus, though of imposing proportions, jumps barely twice its own length. It averaged 7 centimeters and was very active,

springing the instant it was on its back. This was also true of *Aeolus,* but *Melanotus* needed considerable teasing after a few jumps. It is interesting to note that, though *Alaus* jumped only one-fifth the heighth attained by *Aeolus,* it did twelve times as much work.

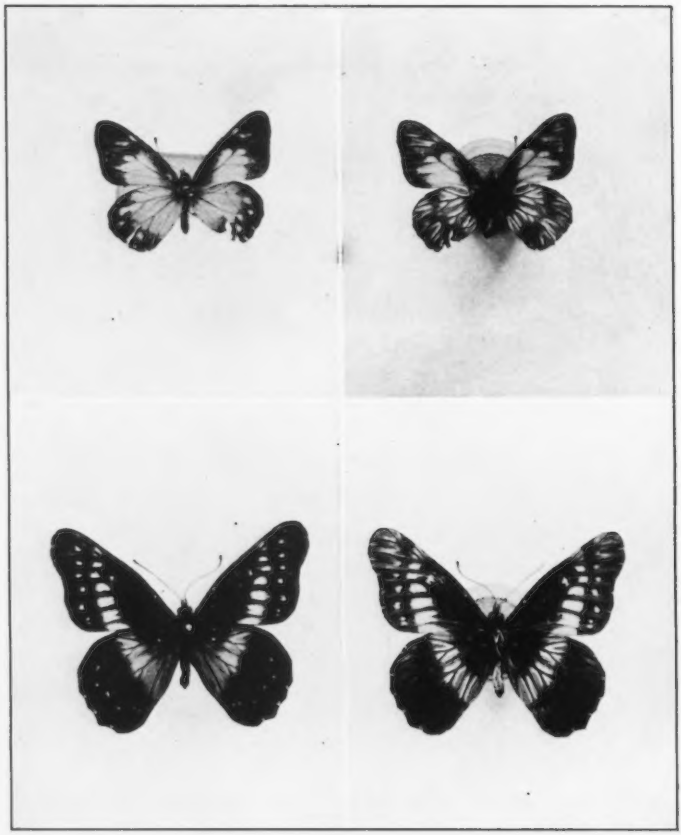
Of the species studied, the height of the jump was inversely proportional to the size of the insect, the ratio being *Aeolus* 5, *Melanotus* 2, and *Alaus* 1. Subsequent work may show species with average heighths between those studied.

TABLE I.
Comparison of Jumping abilities of Three Species of Elaterids.

Species	*Aeolus dorsalia*	*Melanotus difficilis*	*Alaus oculatus*
Length	7 millimeter	15 mm.	34 mm.
Weight	18 milligram	50 mg.	1200 mg.
Maximum Height of Jump	49 centimeter	21 cm.	10 cm.
Average Jump	36.2cm.	17.6 cm.	7.0 cm.
Ratio	5	2	1
Work done per Jump	.65 gm. cm.	.88 gm. cm.	8.40 gm. cm.
No. Jumps	120	986	295
Jumps per Minute	6.6	3.0	7.3

As is known, the mechanism which hurls the insect into the air consists of a prothoracic spine which fits into a mesosternal groove. The spine is pulled out of the groove by throwing the prothorax back so that it catches on a small ridge when fully out of the groove. By the contraction of muscles attached in the pro- and meso-thorax, the spine is plunged into the groove so that the force of its blow and that of the insect's body against the substratum throws the insect spinning upward.

A *Melanotus,* weighing 52 milligrams and jumped at 24 hour periods so as to show the effects of age and fatigue on the



UPPER FIGURES: CATASTICTA FORBESIA.
LOWER FIGURES: C. FLIZA POSTAUREA.—BROWN.

heighth of the jump, gave the following results. The first evening the leaps were made in the glass cylinder while the rest were made with the insect free.

Days	No. of Jumps	Ave. Height	Days	No. of Jumps	Ave. Height
1	200	11.2 cm.	6	20	19.0 "
2	75	18.3 "	7	30	19.0 "
3	61	19.0 "	8	50	18.8 "
4	50	18.7 "	9	15	16.6 "
5	51	19.3 "	10	Dead	0.0 "

During these ten days the insect was kept in a small container with moist earth and some bits of grass. On the ninth day the insect was almost too weak to pull the spine into place, but, though the average was slightly lower, several of the jumps were 19 centimeters high or equal to the previous attainments. When the insect was too fatigued to cock the spring it was possible to cock it with one's fingers and then allow the insect to jump. The heighths under such conditions were approximately the same, 16 to 18 centimeters. When fatigue, age, and starvation have no appreciable effect upon the heighths attainable by this species it would seem that the spring must be partly mechanical. That is, not only is the action muscular, but some sort of physical strain exists between the pro- and mesothorax when the spine is pulled back.

Two New Catasticta (Lepid.: Pieridae).

By F. Martin Brown, Fountain Valley School, Colorado Springs, Colorado.

(Plate VI.)

While examining the specimens of the genus *Catasticta* in the museums in America preparatory to a general revision of the genus, I have found several undescribed forms worthy of names. The present paper deals with two such forms. One is in the collections of the Philadelphia Academy of Natural Sciences, the other in the collections at Cornell University.

Catasticta fliza **postaurea** new subspecies.

Upper surfaces: As in *C. flize* H.-S., but with the light median band of the secondaries a rich golden yellow instead of white. In addition, in the paratype, the small white spots in the broad black-brown margin of the secondaries are obsolete.

The specimens differ from *C. noakesi* Joicey and Rosenberg in having a white median band on the primaries.

Under surfaces: as in *C. fliza,* but with the yellow internerval dashes on the disc so broadened as to make practically a continuous yellow band on the secondaries. The specimens differ from *C. noakesi* in having a white median band on the primaries and much more extended yellow markings on the secondaries.

Length of the costal margin of the forewing: Type 29 mm. Paratype 27.5 mm.

Holotype: a female from Vista Nieve, COLOMBIA. XII. 22. 1922. Coll. by H. L. Viereck. *Paratype:* possibly a male (no abdomen on specimen) from Hacienda Cincinnati, Sierra San Lorenzo, Magdalena, Colombia, 4200 feet, VII. 21. 1920. The types are in the collections of the Philadelphia Academy of Natural Sciences, Philadelphia, Pennsylvania.

Catasticta forbesia new species.

Probably allied to *C. straminae.*

Upper surfaces: resembling to some degree *C. pitana.* The specimen differs on this surface from *C. pitana* in the following respects: The primaries lack the submarginal row of white dots and the subapical dots are reduced in size; the black-brown marginal band of the secondaries contains a series of large white spots, some of which run into the white discal area; the internerval spaces on the margin contain more or less triangular white spots. On the whole, the upper surfaces present the appearance of a slightly aberrant specimen of *pitana,* with the inner margins of the dark marginal band rather irregular.

Under surfaces: It is on these surfaces that the alliance with *straminae* is discernible, the two being identical in shape and position of the maculation. They differ in the base color; it is white in *forbesia* and buff in *straminae.*

Length of the costal margin of the primary: Type 19.2 mm. For a series of *straminae* the average is 20.4 mm. and for a long series of *pitana* it is 27.6 mm.

Holotype: a male from Tambo Eneñas, Camino del Pichis, PERU, VII. 4. 1920. Cornell University Expedition, Lot No. 607, Sub 125. The type is in the collections of the Department of Entomology, Cornell University, Ithaca, New York. The species is named in honor of Dr. William T. Forbes of that institution.

The Food and Habits of Temesiphorus costalis Lec. (Coleop.: Pselaphidae).

By Orlando Park, Department of Zoology, University of Illinois.

The large pselaphid, *Tmesiphorus costalis* Lec., is relatively so abundant in central Illinois that I was led to inquire into its ecology and have accumulated data accordingly since 1926, some of which are given in this short study.

In the last year alone forty-four specimens have been taken from a single sugar maple-bur oak forest near Urbana. Here as elsewhere in ecologically equivalent forests studied, the species is found most commonly on the lower, protected surfaces of moderately moist bark strips which have fallen from logs and come to rest near the latter upon the forest floor. More rarely is it taken under the loose bark of such decayed logs, or within the galleries of ants in the wood, as noted by Blatchley (1910). With careful search it can be obtained throughout the year. My experience has been that the species tends to be locally abundant, and that within a favorable habitat is more often gregarious than solitary. Thus it is common to find three to six beetles under one bark strip, often within several square inches of space, and none or a few widely scattered over the rest of the same log debris. As stated by Blatchley, this gregarious tendency is apparently stronger in winter, the pselaphids hibernating in a loose aggregation in their habitat niches. The Urbana specimens show a greater preponderance of females (28 ♀ ♀, 16 ♂ ♂) collected.

Both sexes usually letisimulate when handled. In this reaction the legs are folded closely to the sides of the body, the head is flexed ventrally and the antennae are folded over and pressed along the mid-ventral area of the body. This response endures for from fifteen to two hundred seconds, depending upon the strength of the original stimulus and the number of letisimulations, since too many induced rapidly may shorten the time of feigning.

It is of interest to note that this species, while commonly taken away from ants, was taken from the nest galleries of large colonies of *Aphaenogaster fulva* Roger*. To better understand

this relationship hosts and beetles were brought to the laboratory and studied in petri dish nests as described previously (Park, 1929).

In these nests the host workers and queens were not seen to molest the beetles, although they may do so. In view of this, and also that the beetles are not confined to the ant nests in nature, but probably visit them irregularly from their adjacent habitat niches in the log mold, *Tmesiphorus costalis* may be considered as a facultative synoekete.

The facultative habit brings up a number of interesting questions, one of which is the food of such a species, e. g. do the beetles lead a normal predaceous life, eating what they can capture in the log mold or are they specialized feeders? The question cannot be answered definitely at present, but the beetles were not seen feeding upon the small arthropods which coinhabited the mold. They were found to feed however, upon the brood of their occasional host, *Aphaenogaster fulva*. This is in agreement with similar findings for other ant-nest pselaphids and clavigerids (Park, 1932 a, b), and tends to the conclusion that the species may live apart from the ants, but, unmolested, may raid the brood chamber of the host living within the same log.

Tmesiphorus costalis apparently does not feed every day. When four or five beetles were placed in a laboratory nest with a cluster of host eggs and larvae they did not feed upon the brood sometimes for three days as subsequent counting of the latter proved. Irregularly, however, one of the beetles would be seen investigating the clustered brood and carrying away an egg or larva. The beetle would then usually retire to a crevice and devour them. One female was seen to completely chew up and eat one young larva and one egg in just an hour, the sharp, curved mandibles working steadily, while the forelegs held the booty in place and the antennae and palpi kept up a continuous movement. Two hours later the same beetle had carried off and eaten a second larva. During this time the other beetles were spending the day with legs and antennae retracted, beneath bits of moist bark in the nest.

*I am indebted to Dr. M. R. Smith and Dr. Thomas Park for the identification of the host ants mentioned.

LITERATURE CITED.

BLATCHLEY, W. S. 1910. Coleoptera or beetles, exclusive of the Rhynchophora, known to occur in Indiana. Indianapolis, Nature Pub. Co.

PARK, ORLANDO. 1929. Ecological observations upon the myrmecocoles of *Formica ulkei* Emery, especially *Leptinus testaceus* Mueller. Psyche, 36: 195-215.

———————— 1932a. The myrmecocoles of *Lasius umbratus mixtus aphidicola* Walsh. Ann. Ent. Soc. Am., 25: 77-88.

———————— 1932b. The food of *Batrisodes globosus* (Lec.). Jour. N. Y. Ent. Soc., 40: 377-378.

Preoccupied Names of Dolichopodid Flies and the New Names Proposed for the Species (Diptera).

By M. C. Van DUZEE, Buffalo, New York.

Having known for some time that some of these names were preoccupied, and my attention having been called to others by Abbe O. Parent, I am giving new names to these species, together with the name, author and time of the first description of the species first described under the name.

Sciapus parvus, new name for *Psilopus pectoralis* Van Duzee, Panama, American Museum Bulletin, Vol. lxi, Article v, p. 168, April 11, 1931.

A *Psilopus pectoralis* was described by Meij. in 1913 and has since been placed in *Sciapus*.

Sciapus tenuis, new name for Sciapus tenuitarsis Van Duzee, Brazil, American Museum Novitates, No. 483, p. 12, August 7, 1931.

A *Psilopus tenuitarsis* Meij. was proposed for a species from New Guinea, in 1913.

Argyra splendens, new name for *Argyra splendida* Van Duzee, California, Proc. U. S. National Museum, Vol. lxvi, Art. 23, p. 21, 1925.

An *Argyra splendidus* Meij. was described from Sumatra, in 1916.

Sympycnus bullacki, new name, after Mr. Bullock who took the specimens, for *Sympycnus imperfectus* Van Duzee, Guatemala, Proc. U. S. National Museum, Vol. lxxiv, Art. 10, p. 25, February 9, 1929.

A *Sympycnus imperfectus* Becker was described from Europe in 1918.

Medetera univittata, new name for *Medetera obesa* Van Duzee, New York State, Proc. Calif. Acad. Sci., fourth series, Vol. ix, p. 264, 1919.

A *Medetera obesa* Kow. was described from Central Europe in 1877.

Medetera arctica, new name for *Medetera bicolor* Van Duzee, Alaska, Ohio Journal of Science, Vol. xxii, p. 249, 1923.

A *Medetera bicolor* Meig, was described from Central Europe in 1838.

Medetera aeneiventris, new name for *Medetera aeneus* Van Duzee, California, California Academy of Sciences, fourth series, Vol. ix, p. 263, August 26, 1919.

A *Medetera aenea* Meigen was described from Central Europe, in 1838.

Medetera viridiventris, new name for *Medetera currani* Van Duzee, Panama, Bulletin American Museum, Vol. lx, Art. v, p. 182, April 11, 1932.

A *Medetera currani* Parent, was described from Africa, January, 1932.

Water-boatmen Try To Land On Auto Top (Hemipt.: Corixidae).

While collecting insects on September 8, 1932, we drove off the main highway near Atlanta, down a narrow road through a rather sparse thicket, and parked our auto. It was about four P. M., and the sun was shining very brightly. While we were yet in the auto, we noticed what appeared to be many drops of rain striking the top of the auto. Then we noticed that there were a great number of bugs striking the bright radiator hood.

When we got out to catch the bugs we saw hundreds of them striking the bright top of the new auto. We caught several hundred in a few minutes. There must have been several thousand of the corixids that struck the top and radiator hood during the fifteen minutes that we remained there. Mr. H. G. Barber, of the U. S. Bureau of Entomology, identified the water-boatmen as *Arctocorixa nitida* Fieber.

The next afternoon we drove our old auto to the same spot, but none of the corixids struck the car. Then the next afternoon we again drove our new auto to the same spot, and the bugs again struck the top and radiator hood in great numbers.

The sun shining upon the top and radiator hood gave the appearance of water. It was very interesting to watch them as they struck the auto top, a great many of them struck it upside down, then they would use their legs as they would, if they had struck water.

We made a survey of the country near the place, and found a small stream a short distance away. This was only a few feet wide and was overhung with small trees.—P. W. FATTIG, Emory University, Emory University, Georgia.

The Life Histories of Eurema demoditas, Lycaena theonus and L. hanno (Lepid.: Pieridae, Lycaenidae).

By J. R. HASKIN, Auburndale, Florida.

The year 1932 was very favorable for the study of butterflies in central Florida. Among the life histories worked out by me were three concerning which little has hitherto been published.

EUREMA DEMODITAS Hübner. This has been listed in American catalogues as *E. delia*. For a corrective synonomy please refer to the May number of ENTOMOLOGICAL NEWS, 1933.

Eurema demoditas and its forms deposit eggs on *Aeschymomene viscidula, Stylosanthus biflora* and probably other plants of this type when available. The eggs are scattered singly, generally upon upper side of leaves. The egg is irregularly spindle shaped, opaque white, resembling the egg of *E. euterpe* (*lisa*) in size and general appearance. Incubation is three days in warm weather, sometimes four in cooler weather.

The newly hatched larva is about 2 mm. long, head brownish black, body slightly tapered, smooth with a few white hairs, pale yellow-green. In two days it changes, becoming all green including head with a faint light stripe on the sides and with more fine hairs. They camouflage well with the fine stem of food plant and at times are hard to locate. Under favourable conditions they grow to about 8 mm. in about five days. Then growing more rapidly they become 16 mm. in eight days by 2 mm. thickness, tapering to the rear. In 11 to 12 days a well developed larva will reach 20 to 22 mm. in length by about 2.5 mm. in thickness. During the greater part of growth they look as if the waxy semi-transparent green body seen on the lower half was covered by a close fitting blanket over upper half. This is a lighter dull green, cross corrugated, dotted with tiny white spots and sparsely haired. There is a trace of a darker green line on back. The edge of this "blanket" is greenish-white appearing as a pale stripe along the sides. The head is also light green with fine hairs.

After hanging up with button and girdle on a stem of the food plant they remain dormant about a day and then form pupae. A well-developed pupa is 15 mm. in length. In shape it resembles the illustration of *E. lisa* in Holland's book, Plate V, no. 56. It has a waxy semi-transparent appearance, pale

green in color with a few dark markings on wing case and abdomen. Some of the females are very heavily marked with brown coloring. A trace of a dark line along sides is continued as a row of dots on abdomen. In three or four days the yellow and black of the wings shows plainly and in five days the butterfly emerges.

The periods as given above, 20 days in all, cover the warm weather conditions. In the fall months when the weather is distinctly more unfavorable the larval and pupal stages not only lengthen but vary greatly. Eggs taken October 29, hatched in three days, but the larval stage varied from 16 to 42 days and the pupal stage varied from 12 to 16 days. When the temperature becomes lower than 50 degrees F. the larvae lie dormant. Low temperature retards the development of the pupae also.

LYCAENA THEONUS Lucas. This butterfly oviposits in the half-developed flower heads of such plants as the cultivated *Plumbago*. The eggs are rather flattened turban-shaped, micropyle very slightly depressed, surface finely pebbled, color a pale tint of Plumbago blue, cross section about ½ mm. and depth ¼ mm. They hatch in three to four days.

Larvae are flesh colored, hairy, tapering slightly to the rear. Head is small, dark brown, tucked under a cowl-like projection. Length about 1 mm. These larvae at once eat little holes in the side of tender partly developed buds. In four days they increase from two to 3½ mms. and are big enough to eat the entire flower buds. By the eighth day they are 6 to 7 mm. in length. The skin is curiously roughened, joints strongly articulated, traces of pale lines showing along the sides. In 10 to 12 days they become 8 to 9 mm. in length by 2 mm. in breadth. The color is green with an over tone of russet red, skin rough, head and legs concealed by overlapping fringe. The cross section of the body is roughly triangular with the apex depressed.

In about 15 days the chrysalids are formed on the under side of leaves. In constructing the girdles some fail to make a single girdle but support themselves by a number of single strands most of which however unite over the back. They are about 6.5 mm. long by 3 mm. wide and 2 mm. deep. Thorax is flesh-colored and abdomen a pale tan. A few dark gray

specks are scattered over the surface with an irregular dark line along the sides. Abdomen is slightly haired. Under side is not flattened but rounded. In a general way it resembles the pupa of *comyntas*. In four days the butterfly colors show and in six to seven days the butterflies emerge.

This study was made during the first half of the warm and dry month of September.

In April, 1933, I found *theonus* ovipositing on *Galactia pilosa*, on Lower Matecumba Key in Florida.

LYCAENA HANNO Stoll. This common butterfly oviposits abundantly on *Chamaecrista brachiata* and *aspera*. Fine large specimens also develop from eggs laid in the partly developed heads of the Crab's-eye vine, *Abrus precatorius*.

I watched a female laying eggs on the Partridge Pea (*brachiata*). The leaf of this plant is made up of 20 to 30 leaflets. Hanno would light on the upper side of a leaf near the main stem and crawl slowly across the branching leaflets dragging its tail along the surfaces. When it came to a fair opening between two leaflets it stuck its tail through and by curling it under would deposit an egg on the under side of the leaf. The dwarf or hairy Partridge Pea (*aspera*) has a leaf composed of 40 to 50 small leaflets set closely together. When laying eggs on this plant Hanno does not attempt the same tactics but oviposits either on the upper side of a leaflet or on the very hairy stem of the new fresh growth. On the Crab's-eye vine the eggs are tucked in between the half-developed buds.

In this district, Hanno's number is kept low by a minute parasite wasp which deposits its egg in the butterfly's egg. This parasite has been identified by Mr. Gahan. of the U. S. National Museum, as "*Trichogramma* sp., probably *minutum*, Riley." Added to this many eggs seem to be infertile. Less than 10% developed larvae out of a large number gathered.

The egg of *hanno* is a dainty light plumbago blue the shade varying slightly on different eggs. It is turban-shaped, rather flat, with a depressed top and a tiny green center. Width is a shade over ½ mm. and depth ¼ mm. Surface is roughend with a finely pebbled pattern. Incubation is three days.

The larvae on emerging are about 1 mm., black head, flesh-colored body with a few long, scanty, upstanding hairs. They immediately seek young partly-developed flower buds and feed on the sides of the buds. In a day or so the color becomes clear amber. In three days the larva changes, the skin roughens and becomes more hairy, head black, body flesh-colored, length about 2 mm. In 5 or 6 days some become green and others rufous in color, length about 4 mm. In 11 days the green and rufous colors are strongly marked, the tiny black head on a transparent neck is hidden along with its legs by folds that over-lie them. Segments are well-articulated, cross-section of body triangular with raised apex. There is a curious green raised dot on either side of the 11th segment. The larvae attain full growth of about 8 mm. in 14 to 18 days. The green larvae have a reddish stripe along the back while the rufous-colored ones have a greenish under-shade. They now retire to the dead leaves on the floor of the breeding cage and after lying quietly one or two days the pupae are formed.

The pupae are waxy pale green with a trace of a line along the center of abdomen. In shape they somewhat resemble *L. scudderi* and are 9 mm. in length, the abdomen much larger than the thorax. As pupation progresses the wings show whitish, then blue and white, the abdomen waxy green. In five to eight days the butterflies emerge.

This study was made during the period from September 25 to October 27, 1932, with eggs gathered in five separate lots.

Personals.

We learn through *The Naturalist* that Mr. Herman J. Erb is now employed by the Standard Scientific Supply Corp., New York, cataloging, indexing and organizing the entomological department of that company. Their publication, *The Naturalist* is devoted to the interest of the naturalist, scientist and collector and the first issue contains many little newsy articles of interest. It may be secured by addressing the publishers, 34 West 4th Street, New York.

We note in *The Pan Pacific Entomologist* that Dr. E. C. Van Dyke is having an interesting and profitable trip thru Europe studying at the large museums and plans to do some collecting in Egypt.

Change of Address.

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Additional Notes on Myiasis in Rabbits (Dipt.: Calliphoridae, Sarcophagidae).

By R. A. Roberts, Division of Insects Affecting Man and Animals, Bureau of Entomology, U. S. Department of Agriculture.

The frequency of screw worm infestations in *Lepus californicus texianus* Waterhouse, the common Texas jack rabbit, at Uvalde, Texas, has led to the conclusion that myiasis in rabbits is not uncommon in nature.

Johannsen, in 1926, wrote of the occurrence of larvae of *Wohlfahrtia vigil* Walk. in young rabbits reared in the open at Ithaca, N. Y. He has continued to observe attacks by this species on rabbits.

In 1931 the author reported several cases in which blowfly attacks on jack rabbits followed either gunshot wounds or lesions caused by the larvae of *Cuterebra*. These instances occurred in 1930, and since then two additional cases of infestations of gunshot wounds have been observed. These are here described in detail, the *Sarcophaga* being determined by David G. Hall.

As soon as the rabbits in the two cases were killed collections of larvae from the wounds, together with the flesh surrounding the affected area, were immediately removed from the animal and placed in quart Mason jars containing sifted sand. These jars were capped with lids of 60-mesh wire cloth and placed in fly-proof cages in a fly-proof insectary. No subsequent fly infestation was therefore possible.

Case 1. On July 24, 1931, an adult jack rabbit weighing 6½ pounds was killed in dense mesquite brush. An infested wound 30 by 50 mm. was found on the left rump at the base of the tail, extending through the fleshy portion to the inside of the leg where it again opened. It was apparently caused by a small-caliber rifle. Some of the fly larvae present were mature, and it appeared that others had migrated. This suggested an old wound. A seropurulent discharge was occurring, and the wound had an extremely foul odor. The larvae had worked entirely through the leg, and additional fly eggs had been de-

posited recently on the side of the wound. It was apparent that the rabbit would have died. The following adult specimens were reared from the larvae which remained in the wound: August 5 to 7, 35 *Cochliomyia macellaria* Fab.; August 15, 1 *Sarcophaga plinthopyga* Wied.

Case 2. On May 20, 1932, an adult jack rabbit was killed in a dense growth of mesquite and cactus. An injury in the head, another on a rear leg, and roughened spots on other parts of the body indicated that the rabbit had been previously wounded with a shotgun. The rabbit was greatly emaciated. The wound, 45 mm. in diameter, in the lower right side of the face, penetrated through skin and flesh into the interior of the mouth, extending up to about 25 mm. below the eye, and included the right nostril. There was no discharge or pus although the wound appeared old. There were many small maggots and some larger ones; a fresh lot of eggs had been deposited on the margin of the wound. The rabbit apparently would have died. The emergence from the larvae collected was as follows: May 31 to June 1, 16 *C. macellaria;* June 6 to 15, 583 *S. plinthopyga;* and June 13-14, 2 *Brachymeria fonscolombei* (Dufour). The last mentioned insect is a hymenopterous parasite of blowflies, and this is the first record of its being reared from blowfly larvae removed from a wound. However, this parasite has been observed upon wounds in living cattle.

In each of these cases, and in those previously recorded by the author, the screw worm fly, *C. macellaria,* was reared. In all instances of gunshot wounds, larvae of *S. plinthopyga* were present. *S. plinthopyga* did not accompany any infestations of screw worms in *Cuterebra* lesions in rabbits, but in one instance *Sarcophaga sulcata* Ald. was found.

Blowfly attacks in rabbits probably follow many gunshot wounds, and it is probable that during the seasons with weather favorable for fly attacks such infestations result fatally. An infestation of a body wound is almost certain to result in the penetration of the intestine, and a head wound permits early penetration of the mouth and nostrils. Infestations occasionally occur within *Cuterebra* lesions, which are usually on the rump, if favorable conditions of temperature and humidity exist.

In most cases noted, additional masses of eggs, probably of *C. macellaria* but possibly of *Lucilia,* had been deposited on the wound margins. From the second case noted in this paper, the 583 *S. plinthopyga* larvae would be sufficient to consume the soft tissues of the entire head of the rabbit.

On October 16, 1931, a matured *Cuterebra* larva was removed from the back of a jack rabbit. The larva was placed in a pint Mason jar containing 2 inches of dry sand, where it overwintered as a pupa. At no time was moisture added. Four and a half months (136 days) later, on February 29, 1932, an adult male *Cuterebra scudderi* Tns. emerged. This is a rather rare species. It was determined by J. M. Aldrich.

LITERATURE CITED.

JOHANNSEN, O. A. 1926. *Wohlfahrtia vigil,* a parasite upon rabbits. Jour. Parasit. 13: 156.

ROBERTS, R. A. 1931. Myiasis in Jack Rabbits, *Lepus californicus texianus.* Jour. Parasit. 18: 102-104.

Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The **figures within brackets** [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of ENTOMOLOGICAL NEWS for 10c. The number of, or annual **volume,** and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B

☞*Note the change in the method of citing the bibliographical references, as* **explained above.**

Papers published in the Entomological News are not listed.

GENERAL. — Bergmann, A. — Professor Dr. Otto Schmiedeknecht. Ein lebensbild eines grossen deutschen entomologen. [18] 27: 25-33, ill. **Campos, F.**—Estudio sobre una Pequena Coleccion de Insectos de Puna Vieja y Archipielago de Galapagos. [108] 14: 9-14. **Deville, J.**

St. C.—La vie et les travaux de. Par P. de Peyerimhoff. [24] 102: 1-8, ill. **Dodge, E. A.**—Obituary. By E. P. Van Duzee. [55] 9: 52. **Holford, H. O.**—Greasy insects. [9] 66: 92. **Keifer, H. H.**—Insect notes on Paraneura sp., Homaeosoma sp., Andrena sp. [55] 9:62. **Phillips, M. E.**—Insect photography. [Nat. Mag.] 21: 210-211, ill. **Ramme, W.**—Mimes of the insect drama. [Nat. Mag.] 21: 235-237, ill. **Straubel, H.**—Entomologie, schule und sammeltätigkeit. [17] 50: 89-91. **The Naturalist.**—A good method outlined for preserving live pupae through winter months. [Stand. Sci. Sup. Corp. N.Y.C.] 1: 1. **Van Duzee, E. P.**—Insects at the California Academy of Sciences. [55] 9: 72. **Zikán, J. F.**—"Doppelgänger" der neotropischen insekten-fauna. [105] 3: 38-45.

ANATOMY, PHYSIOLOGY, ETC.—Abbott, R. L.—Instinct or intelligence in the great golden digger. [Pro. Iowa Acad. Sci.] 38: 255-258. **Baumann, C.**—Zur kenntnis der metamorphose von Ephialtes manifestator, Coleocentrus excitator und Echthrus reluctator (Ichn.). [34] 102: 143-155, ill. **Bodenheimer, F. S.**—Ueber die aktivität von Vespa orientalis im jahresverlauf in Palästina. Ein beitrag zur ökologischen methodik. [34] 102: 135-140, ill. **Richards, A. G.**—Comparative skeletal morphology of the noctuid Tympanum. [70] 13: 43pp., ill. **Tan & Li.**—Variations in the color patterns in the lady-bird beetles, Ptychanatis axyridis. [Peking Nat. Hist. Bull.] 7: 175-193, ill.

ARACHNIDA AND MYRIOPODA.—*Gertsch, W. J.—Notes on American spiders of the family Thomisidae. [40] 593: 22 pp. ***Hilton, W. A.**—A new whip-scorpion from Cuba. [55] 9: 91-92. **Petrunkevitch, A.**—An inquiry into the natural classification of spiders, based on a study of their internal anatomy. [Trans. Connecticut Acad. Arts & Sci.] 31: 303-389, ill.

THE SMALLER ORDERS OF INSECTS.—Bartenef, A.—Uebsicht der Leucorrhinia-Arten-und-Varietäten (Odonata, Libellulinae) unter geographischen, biologischen und morphologischen gesichtspunkten. [52] 2: 1-53, ill. ***Emerson, A. E.**—A revision of the genera of fossil and recent Termopsinae (Isoptera). [67] 6: 165-195, ill. **Goetsch, W.**—Die chilenischen termiten. [89] 64: 227-244, ill. ***Hood, J. D.**—Rhabdothrips albus, a new genus and species of Thysanoptera from Panama. [10] 35: 45-48, ill. **Mills & Rolfs.**—Collembola from the state of Washington. [55] 9: 77-83. ***Moulton, D.**—The Thysanoptera of South America. [105] 96-133, ill. **Navás, L.**—Insectos Suramericanos. [Rev. Acad. Cien. Madrid] 29: 191-198, ill. **Walker,**

List of the Titles of Periodicals and Serials Referred to by Numbers in Entomological Literature in Entomological News.

1. Transactions of The American Entomological Society. Philadelphia.
2. Entomologische Blätter, red. v. H. Eckstein etc. Berlin.
3. Annals of the Carnegie Museum. Pittsburgh, Pa.
4. Canadian Entomologist. London, Canada.
5. Pysche, A Journal of Entomology. Boston, Mass.
6. Journal of the New York Entomological Society. New York.
7. Annals of the Entomological Society of America. Columbus, Ohio.
8. Entomologists' Monthly Magazine. London.
9. The Entomologist. London.
10. Proceedings of the Ent. Soc. of Washington. Washington, D. C.
11. Deutsche entomologische Zeitschrift. Berlin.
12. Journal of Economic Entomology, Geneva, N. Y.
13. Journal of Entomology and Zoology. Claremont, Cal.
14. Entomologische Zeitschrift. Frankfurt a. M., Germany.
15. Natural History, American Museum of Natural History. New York.
16. American Journal of Science. New Haven, Conn.
17. Entomologische Rundschau. Stuttgart, Germany.
18. Internationale entomologische Zeitschrift. Guben, Germany.
19. Bulletin of the Brooklyn Entomological Society. Brooklyn, N. Y.
20. Societas entomologica. Stuttgart, Germany.
21. The Entomologists' Record and Journal of Variation. London.
22. Bulletin of Entomological Research. London.
23. Bollettino del Laboratorio di Zoologia generale e agraria della R. Scuola superiore d'Agricultura in Portici. Italy.
24. Annales de la société entomologique de France. Paris.
25. Bulletin de la société entomologique de France. Paris.
26. Entomologischer Anzeiger, hersg. Adolf Hoffmann. Wien, Austria.
27. Bolletino della Società Entomologica. Genova, Italy.
28. Ent. Tidskrift utgifen af Ent. Föreningen i Stockholm. Sweden.
29. Annual Report of the Ent. Society of Ontario. Toronto, Canada.
30. The Maine Naturalist. Thornaston, Maine.
31. Nature. London.
32. Boletim do Museu Nacional do Rio de Janiero. Brazil.
33. Bull. et Annales de la Société entomologique de Belgique. Bruxelles.
34. Zoologischer Anzeiger, hrsg. v. E. Korschelt. Leipzig.
35. The Annals of Applied Biology. Cambridge, England.
36. Transactions of the Entomological Society of London. England.
37. Proceedings of the Hawaiian Entomological Society. Honolulu.
38. Bull. of the Southern California Academy of Sciences. Los Angeles.
39. The Florida Entomologist. Gainesville, Fla.
40. American Museum Novitates. New York.
41. Mitteilungen der schweiz. ent. Gesellschaft. Schaffhausen, Switzerland.
42. The Journal of Experimental Zoology. Philadelphia.
43. Ohio Journal of Sciences. Columbus, Ohio.
44. Revista chileña de historia natural. Valparaiso, Chile.
45. Zeitschrift für wissenschaftliche Insektenbiologie. Berlin.
46. Zeitschrift für Morphologie und Ökologie der Tiere. Berlin.
47. Journal of Agricultural Research. Washington, D. C.
48. Wiener entomologische Zeitung. Wien, Austria.
49. Entomologische Mitteilungen. Berlin.
50. Proceedings of the U. S. National Museum. Washington, D. C.
51. Notulae entomologicae, ed. Soc. ent. Helsingfors. Helsingfors, Finland.
52. Archiv für Naturgeschichte, hrsg. v. E. Strand. Berlin.

53. Quarterly Journal of Microscopical Science. London.
54. Annales de Parasitologie Humaine et Compareé. Paris.
55. Pan-Pacific Entomologist. San Francisco, Cal.
56. "Konowia". Zeit. für systematische Insektenkunde. Wien, Austria.
57. La Feuille des Naturalistes. Paris.
58. Entomologische Berichten. Nederlandsche ent. Ver. Amsterdam.
59. Encyclopédie entomologique, ed. P. Lechevalier. Paris.
60. Stettiner entomologische Zeitung. Stettin, Germany.
61. Proceedings of the California Academy of Sciences. San Francisco.
62. Bulletin of the American Museum of Natural History. New York.
63. Deutsche entomologische Zeitschrift "Iris". Berlin.
64. Zeitschrift des österr. entomologen-Vereines. Wien.
65. Zeitschrift für angewandte Entomologie, hrsg. K. Escherich. Berlin.
66. Report of the Proceedings of the Entomological Meeting. Pusa, India.
67. University of California Publications, Entomology. Berkeley, Cal.
68. Science. New York.
69. Comptes rendus hebdoma. des séances de l'Académie des sciences. Paris.
70. Entomologica Americana, Brooklyn Entomological Society. Brooklyn.
71. Novitates Zoologicae. Tring, England.
72. Revue russe d'Entomologie. Leningrad, USSR.
73. Quarterly Review of Biology. Baltimore, Maryland.
74. Sbornik entomolog. národniho musea v Praze. Prague, Czechoslavokia.
75. Annals and Magazine of Natural History. London.
76. The Scientific Monthly. New York.
77. Comptes rendus heb. des séances et mémo. de la soc. de biologie. Paris.
78. Bulletin Biologique de la France et de la Belgique. Paris.
79. Koleopterologische Rundschau. Wien.
80. Lepidopterologische Rundschau, hrsg. Adolf Hoffmann. Wien.
81. Folia myrmecol. et termitol. hrsg. Anton Krausse. Bernau bei Berlin.
82. Bulletin, Division of the Natural History Survey. Urbana, Illinois.
83. Arkiv för zoologie, K. Svenska Vetenskapsakademien i. Stockholm.
84. Ecology. Brooklyn.
85. Genetics. Princeton, New Jersey.
86. Zoologica, New York Zoological Society. New York.
87. Archiv für Entwicklungs mechanik der Organ., hrsg. v. Roux. Leipzig.
88. Die Naturwissenschaften, hrsg. A. Berliner. Berlin.
89. Zoologische Jahrbücher, hrsg. v. Spengel. Jena, Germany.
90. The American Naturalist. Garrison-on-Hudson, New York.
91. Journal of the Washington Academy of Sciences. Washington, D. C.
92. Biological Bulletin. Wood's Hole, Massachusetts.
93. Proceedings of the Zoological Society of London. England.
94. Zeitschrift für wissenschaftliche Zoologie. Leipzig.
95. Proceedings of the Biological Soc. of Washington, Washington, D. C.
96. La Cellule. Lierre, Belgium.
97. Biologisches Zentralblatt. Leipzig.
98. Le Naturaliste Canadien. Cap Rouge, Chicoutimi, Quebec.
99. Mélanges exotico-entomologiques, Par Maurice Pic. Moulins, France.
100. Bulletin Intern., Académie Polonaise des Sci. et des Lett. Cracovie, Poland.
101. Tijdschrift voor entomologie, Nederlandsche Entomol. Ver., Amsterdam.
102. Entomologiske Meddelelser, Entomologisk Forening, Copenhagen.
103. Journal of the Kansas Entomological Society, Lawrence, Kansas.
104. Revista de la Sociedad entomologica Argentina, Buenos Aires.
105. Revista Entomologia, São Paulo, Brazil.
106. Anales Sociedad Cientifica Argentina, Buenos Aires.
107. Stylops: a Journal of Taxonomic Entomology, London.
108. Revista, Col. Nac. Vicente Rocafuerte, Guayaquil.

E. M.—The Odonata of Manitoba. [4] 65: 57-72. ***Werneck. F. L.**—Sur une nouvelle espèce de Pou (Hopopleura brasiliensis). [Comp. rendus Soc. Biol., Rio de Janeiro] 109: 754-755, ill. ***Werneck, F. L.**—Nova especie de Anoplura (Haematopinidae). (S) [Mem Inst. Oswaldo Cruz] 26: 235-237, ill. ***Werneck, F. L.**—Sobre uma especie nova de Hoplopleura (Anoplura, Haematopinidae). Sobre uma nova especie de anoplura parasita da Ihama. (S). [Rev. Med. Cir. Brasil] 40: 345-346, 346-348, ill.

ORTHOPTERA.—Pruthi, H. S.—An interesting case of maternal care in an aquatic cockroach, Phlebonotus pallens (Epilamprinae). [Current Sci.] 1: 273, ill. **Sen, A. C.**—The genitalia of the common Indian cockroach-Periplaneta americana. [Jour. Asiatic Soc. Bengal] 27: 111-118, ill. **Sowerby, A. C.**—Cricket gourds and culture in China. [China Jour.] 18: 157-162, ill.

HEMIPTERA.—Ancona, L.—El Ahautle de Texcoco. [Notonectidae] [An. Inst. Biol., Mexico] 4: 51-69, ill. ***Campos, F.**—Una nueva especie del genero Triatoma. (S). [108] 14: 3-6. ***da Fonseca, J. P.**—Um novo Membracideo do genero Hypsoprora. [105] 3: 5-7, ill. **Keifer, H. H.**—Engytatus geniculatus. [55] 9: 67. ***Knight, H. H.**—Calocorisca californica n. sp., an additional genus for the United States (Miridae). [55] 9: 69-71. ***Knight, H. H.**—Lampethusa nicholi, a new species from Arizona and Texas (Miridae). [55] 9: 71-72. ***Van Duzee, E. P.**—A new Lepidae from California. [55] 9: 96.

LEPIDOPTERA.—*Benjamin, F. H.—Notes on Phalaenidae from arctic America supplemented with material from high altitudes. [55] 9: 53-62. **Cottle, J. E.**—Another rare butterfly. [55] 9: 73-74. **Herrick & Griswold.**—On the scientific name of the webbing clothes moth. [68] 77: 391-392. ***Ingham, C. H.**—Two new California butterflies. [55] 9: 75-76. **Storer, T. I.**—Aglais californica in California during 1932. [55] 9: 67-68. **Wickwire & Calale.**—Additional notes on Tropaea luna. [4] 65: 56-57.

DIPTERA.—*Alexander, C. P.—The crane-flies of Puerto Rico. [Jour. Dept. Agric. Puerto Rico] 16: 347-387, ill. ***Borgmeier, T.**—Duas especies novas de Tabanidae do Brasil. [105] 3: 1-5, ill. ***Borgmeier, T.**—Um novo genero myrmecophilo de Phorideos da Argentina. [105] 3: 45-48, ill. **Campos, F.**—El gigantesco tabano Pantophthalmus bellardii. [108] 14: 17-19. **Fischer, C. R.**—Nota sobre Anastrepha punctata (Trypetidae) e uma especie nova de

Cyrtonotum (Drosophilidae). [105] 3: 83-92, ill. **Glasgow, H.**—The host relations of our cherry fruit flies. [12] 26: 431-438, ill. ***Hendel, F.**—Ueber einige typen Wiedemann's und Schiner's von acalyptraten Musciden aus Südamerika, nebst einigen verwandten arten. [105] 3: 58-83, ill. ***James, M. T.**—New Asilidae from Colorado. [40] 596: 3 pp. ***Shannon, R. C.**—Correction in Anopheles. [10] 35: 58. **Townsend, C. H. T.**—On Nyssorhynchus tarsimaculatus Goeldi and the races of Nyssorhynchus. [105] 3: 7-12. ***Van Duzee, M. C.**—On five species of Diptera, new and old. [55] 9: 63-67, ill. ***Van Duzee, M. C.**—New Dolichopodidae from North America with notes on several described species. [40] 599: 27 pp. ***Van Duzee, M. C.**—The Templeton Crocker Expedition of the California Academy of Sciences, 1932. [61] 21: 65-73, ill. (S).

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SPECIAL NOTICES.—Bibliography of Australian Entomology 1775-1930, with biographical notes on authors and collectors. By A. Musgrave. A 380 page publication of the Royal Zoological Society of New South Wales 1932, which students of other faunae may find useful.

The first Lieferung of *Bibliographia Odonatologica*, compiled by Dr. Erich Schmidt, Berlin-Steglitz, and published by Fritz Wagner, Vienna, xviii, Haizingergasse 4, has appeared under date of April 15, 1933. Announcement of this project was made in the NEWS for November, 1931, page 246. This installment comprises one plate and 116 pages in large clear type. The text contains the titles and places of publication of all papers, in chronological order, on Odonata, under authors' names, arranged aphabetically, from Aaron to Dobson. In many cases the author's name is followed by the dates of his birth and death, the locality in which he chiefly lived or worked and references to biographies or obituary notices. Plate I is labeled "Amerikanische Autoren" and contains portraits of E. M. Walker, E. B. Williamson, P. P. Calvert, C. H. Kennedy and J. G. Needham. It is expected that 4 or 5 additional parts, each of 80-96 pages and a plate of portraits, will be required to complete the book. Until the publication of Lieferung 2, the price for the entire work is 1.20 Reichsmark for each "Bogen" (16 pages) and .80 RM. for each plate. Afterward the price will be 1.50 and 1.00 RM. respectively. The last part is to include subject, zoogeographical, anatomical, physiological, evolutionary, migrational and other indexes. The bibliography appears to be very complete and should be extremely useful. As the publication of the entire work awaits a sufficient number of subscribers, it is to be hoped that all students of this group of insects and all entomological laboratories and libraries will assist themselves by subscribing at once.

Probably every student of Lepidoptera has seen or is aware of the magnificent work on that order entitled THE MACRO-LEPIDOPTERA OF THE WORLD by Dr. Adolf Seitz, now being published by Alfred Kernen of Stuttgart.

Without doubt it is, in this line, the greatest undertaking of recent years, and too much applause cannot be given Dr. Seitz for giving the entomological world such a splendid monument. Its conception was daring and its production, now in its twenty-sixth year, required courage, and faith in mankind. Its completion is essential and Dr. Seitz should have the support of all those able to give such, either financially by subscribing to it, or by collaborating in its production.

The plan of the author in this great work was to describe and figure all of the known species of butterflies and the larger moths of the world, giving their systematic arrangement based on the most recent revision by recognized authorities. This attempt to cite all the known species with their important synonyms, and to illustrate in color almost every species mentioned, is fairly well carried out, and this alone makes the work an absolutely necessary part of the library of every working macro-lepidopterist.

The work appears in two parts, (1) Palaearctic Fauna, consisting of four volumes completed, 1864 pp., 345 pls., and four supplementary volumes now printing. (2) Exotic Fauna, which is divided into three sections, Americana, Indo-Australiana and Africana, which will comprise sixteen volumes. The volumes on the butterflies 2956 pp., 460 pls., and some of those on the moths are completed. A seventeenth volumn will treat of the morphology, biology and geographical distribution. The work is published in quarto size, in German, French and English editions, and may be secured from the publishers in any desired combination of families. Information will be gladly supplied by addressing Alfred Kernen, Verlag, Poststrasse 7, Stuttgart, Germany.

However commendatory this work may be, there are, as is to be expected, some imperfections, especially errors in typography and in taxonymy, and others which are more or less pardonable. But we also find a few which are not excusable, and these latter should be called to the attention of those consulting the work. Not being a lepidopterist in the strictest sense of the word, I may possibly lay too much stress on what will be considered trivial, ignoring, for lack of knowledge more of the fundamental. But it is these trivial things that are annoying and quite numerous while the fundamental are probably few. It is by having had to consult this great work in attempting to determine species when rearranging collections of

American Heterocera, and by instances called to my attention by authoritative students of this order, that the following remarks are made.

The quality of the color work on the numerous plates is sometimes very poor, which when figuring species very similar in color and pattern, renders the illustrations practically worthless. We often find an entirely different color from that described, or the pattern too prominent, or rarely entirely incorrect. Of course the mechanical rendition of the correct colors and their tints and shades is extremely difficult, and one cannot expect to secure by this means an exact reproduction of the original colors without incurring prohibitory expense. On the other hand an incorrect color figure is very misleading and of possible value only if showing the pattern clearly enough to assist the description of the color. Better still in such cases would be references to good previous figures of the species, if such exist, and which would be well worth the extra line or two.

It was, of course, necessary to have different students work up the families or groups in which they are considered to be, and should be, authoritative, but the selection of these collaborators, in some cases was very unfortunate. This resulted in considerable difference in the quality of descriptions; indeed many are quite worthless. I have seen some inexcusable errors in giving references to the illustrations, errors in giving the name of the author of the species, sometimes omitting it entirely, evidence of poor proofreading. Sometimes a specific name will be changed in one place and not in another. Errors in giving the vein terminology correctly, often result in such glaring nonsense as "vein 2 midway between 2 and 4." These of course are readily caught by one familiar with the subject discussed. More serious it is that there is no uniformity in the vein terminology, which in some instances will no doubt lead the novice far astray. Some collaborators use the number system of Meyrick and Hampson; one uses median for the veins which another terms the radials, or radials of one are the subcostals of another. One often runs against "dead ends" where a comparison is made with a species not mentioned in the work, or with species which do not appear from the description or figure to be enough alike for comparison. This latter procedure is very common.

Inexcusable and much to be criticized is the trend, encountered now and then, of a collaborator discoloring his work with personalities, often going so far as to make bare misstatements of facts. As an example may be selected a part on the Rhopalocerous genus *Lycaena* where we find the following statement: "*pallidecramera* and *pallidecanariensis* Verity are two names Dr. Verity has kindly provided for forms still to be discovered

which he presumes to occur in damp localities in Africa. . . . A kindlier provision for the future can scarcely be imagined." The fact is, as can be readily ascertained, Dr. Versity based these names on forms from Northern Africa elegantly figured by Oberthür in his magnificent "Études de Lépidoptérologie Comparée." One consulting this part of the work should be cautious in accepting statements made therein. Very annoying are the long delays in the appearance of a plate or two in a group where all the text and the other associated plates have been issued for some time. I note here one instance where the text was printed in 1928, and one of the associated plates has not yet appeared.

These remarks may seem to convey the idea that we here have a very imperfect and impractical work. I hope that no one will so understand my purpose. These volumes have a place on our work tables that cannot be taken by any other. They are of inestimable value and are constantly being used by many working macrolepidopterists. I have said above that errors cannot be eliminated in a work constructed as this one is, and my purpose here is to call the attention of lepidopterists to this grand work, and also prepare them for the nature of some of the errors contained therein. E. T. Cresson, Jr.

Lehrbuch der Entomologie, by Professor Hermann Weber, of Danzig. 726 pages, 555 figures. Published by Gustav Fischer, Jena.

A first glance through the pages of this book, treating largely of insect structure, reveals at once that we have opened something *new* in entomological texts. The general appearance breaks with tradition, most of the old familiar illustrations are absent, and a multitude of new ones takes their places; entomology here asserts that it has passed its adolescent stage.

The book is not only predominantly morphological in the sense that it deals largely with structure and the homologies of structural parts, but it is morphological from the viewpoint that anatomical form is an adaptation to function. In other words, the morphology of insects becomes a part of the biology of insects, as it properly should be. The chapters do not follow the conventional classification of organs according to anatomical continuity of tissues; the subject of each section embraces the organs that are functionally associated in the maintenance of the physiological activities of the insect. Animal functions that maintain the individual consist of two principal groups of activities, namely, metabolism and movement; thereto, and utilizing each, is added the function of reproduction. For the first time in entomology we have a general text book in which

the subject of morphology is built up on this fundamental fact.

The first chapter gives a leading example of the naturalness and educational value of associating in a text the organs that work together in the economy of the animal. It deals with the skeleton and the musculature; that is, it presents as a unity the structural elements of insect mechanisms. In the older text books on entomology, the skeleton and the muscles had little to do with each other, except perhaps that a few diagrams showed something of the mechanism of a leg or the wings. If the muscles were given particular attention they were assigned to a special chapter on muscles. Here the student could leave them if he so chose, and he usually did so choose. As a consequence many entomologists have grown up with the idea that a work on insect anatomy is principally the making of a map of the skeletal sclerites. Far from being an exhausted subject, the study of the external structure of insects offers yet to the student its most interesting and instructive phase, which is that of understanding the relation of sclerites to muscles, and of following thus the evolution of insect mechanisms.

From the practical standpoint of determining the homologies of skeletal parts used in the description of insect species, a study of muscles will easily vindicate itself. Where endless series of comparative studies on sclerites have been made without leading to conclusive results, a reference to the muscles will in many cases show at once fundamental structural distinctions that were overlooked entirely in purely surface studies. However, it is the fate, or the natural course, of most sciences, and particularly of entomology, to progress backward. Hence, it is encouraging to feel that, with the arrival of a new guide, we are at last able to see where we are going.

The only faults that can be found in Dr. Weber's treatment of the skeletal parts are in places where he has not sufficiently based his scheme of skeletal homologies on the muscle relations. Thus his treatment of the labium is not entirely satisfactory or consistent, because the primary elements of the organ are not distinguished in all cases according to the evidence from muscle attachments. Also, it would appear, the homologies of the ingestive mechanism are not consistently followed through the various groups of insects, especially in the sucking orders. But the field is new, and further studies are certain to throw more light on structural relationships that are as yet imperfectly understood. On the other hand, the author gives us a wealth of anatomical details from his own wide knowledge of the feeding mechanism of insects.

The Nervous System and the Sense Organs furnish the sub-

ject matter for the second chapter. Much of the text on the nervous system deals with the finer structure of the nerve centers, such as the interrelation of the fibrous tracts in the brain and the ventral nerve cord. To the sense organs are devoted 67 pages, in which the author apparently has condensed and tabulated practically all that is known on the subject of sense receptors in insects, and what is not incorporated in the text is made available by the many bibliographical references.

The third chapter, entitled *The Interaction of the Sense Organs, the Nervous System, and the Effectors,* links up the chain of structural elements described in the two preceding chapters. It includes a discussion of the physiology of reflexes· coördination, orientation, and the usual tropisms.

The fourth chapter, on *The Organs of Metabolism,* is a natural assemblage of the structural parts of the insect's body that maintain the chemical life of its constituent cells. The chapter, therefore, treats of the organs of alimentation, the Malpighian tubules· the respiratory system, the blood, the organs of circulation, the oenocytes, and the fat body, and includes for good measure the ectodermal glands.

The subjects of the fifth chapter, *Reproduction and Development,* are associated with each other, as they are in many text books, though biologically they are quite distinct processes. The two may· and often are, put at opposite ends of a book, and, indeed, it is a perplexing problem to decide whether development should be used as a guide to adult structure, or given as the biological sequence of the reproductive function. Since a book must have a beginning and an end, the author must decide where to cut the life cycle. The text treats fully the organs of reproduction, the history of the germ cells, fertilization, egg-laying, nest building, care of the brood, and concludes with 58 pages devoted to ontogeny in its wider sense, including embryonic and postembryonic development.

The sixth chapter is a condensed survey of the principal fields of insect ecology. The seventh and final chapter presents a brief but comprehensive review of insect classification. The remainder of the book includes many pages of classified literature references, probably 2000 entries by author's name and place of publication, and concludes with an ample index.

The subject of insect morphology, as demonstrated by Dr. Weber's book, has now reached a stage in which it may rightly assert its ability to render the fundamental services that should be expected of it to the other branches of entomological science, particularly, in taxonomy and insect relationships, physiology, and ecology. R. E. SNODGRASS.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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